What is claimed is:

1. A vaccine, comprising a cell having a membrane-bound fusion protein comprising a non-antibody immunomodulatory molecule operatively fused to a heterologous membrane attachment domain.

2. The vaccine of claim 1, wherein said non-antibody immunomodulatory molecule is an immunostimulatory molecule.

3. The vaccine of claim 1, wherein said non-antibody immunomodulatory molecule is an immunosuppressive molecule.

4. The vaccine of claim 1, wherein said non-antibody immunomodulatory molecule is selected from the group consisting of cytokine and heat shock protein.

5. The vaccine of claim 4, wherein said cytokine is selected from the group consisting of:

granulocyte macrophage colony stimulating factor (GM-CSF),
granulocyte colony stimulating factor (G-CSF),
interferon γ (IFN-γ),
interferon α (IFN-α),
tumor necrosis factor-α (TNF-α),
tumor necrosis factor-β (TNF-β),
interleukin-1 (IL-1),
interleukin-2 (IL-2),
interleukin-3 (IL-3),
interleukin-4 (IL-4),
interleukin-6 (IL-6),
interleukin-7 (IL-7),
interleukin-10 (IL-10),
interleukin-12 (IL-12),
lymphotactin and

dendritic cell chemokine 1 (DC-CK1).

6. The vaccine of claim 5, wherein said cytokine is GM-CSF.

7. The vaccine of claim 1, wherein said cell is a prokaryotic cell.

8. The vaccine of claim 1, wherein said cell is a eukaryotic cell.

9. The vaccine of claim 8, wherein said eukaryotic cell is a fibroblast

10. The vaccine of claim 8, wherein said eukaryotic cell is a tumor cell.

11. The vaccine of claim 10, wherein said tumor cell is selected from the group consisting of melanoma cell, renal carcinoma cell, neuroblastoma cell, glioblastoma cell, lung cancer cell, colon tumor cell, breast tumor cell, prostate tumor cell, bladder carcinoma cell and plasmacytoma cell.

12. The vaccine of claim 1, wherein said cell further has a disease-associated antigen or immunogenic epitope thereof.

13. The vaccine of claim 12, wherein said disease-associated antigen is endogenous to said cell.

14. The vaccine of claim 12, wherein said disease-associated antigen is exogenous to said cell.

9 ~~15~~. The ~~vaccine~~ pharmaceutical composition of claim ~~14~~ 8, wherein said disease-associated antigen is selected from the group consisting of tumor-associated antigen, autoimmune disease-associated antigen, infectious disease-associated antigen, viral antigen, parasitic antigen and bacterial antigen.

10 ~~16~~. The ~~vaccine~~ pharmaceutical composition of claim 9 ~~15~~, wherein said tumor-associated antigen is selected from the group consisting of p53 and mutants thereof, Ras and mutants thereof, a Bcr/Abl breakpoint peptide, HER-2/neu, HPV E6, HPV E7, carcinoembryonic antigen, MUC-1, MAGE-1, MAGE-3, BAGE, GAGE-1, GAGE-2, N-acetylglucosaminyltransferase-V, p15, gp100, MART-1/MelanA, tyrosinase, TRP-1, β-catenin, MUM-1 and CDK-4.

11 ~~17~~. The ~~vaccine~~ pharmaceutical composition of claim 9 ~~15~~, wherein said autoimmune disease-associated antigen is a T cell receptor derived peptide.

12 ~~18~~. The ~~vaccine~~ pharmaceutical composition of claim ~~14~~ 8, wherein said disease-associated antigen or immunogenic epitope thereof is ~~operatively~~ fused to said membrane-bound fusion protein.

19. A method of modulating an immune response against a disease-associated antigen, comprising administering to an individual a vaccine comprising a cell having:

(a) a disease-associated antigen or immunogenic epitope thereof and

(b) a non-antibody immunomodulatory molecule operatively fused to a heterologous membrane attachment domain.

20. The method of claim 19, wherein said non-antibody immunomodulatory molecule is an immunostimulatory molecule.

21. The method of claim 19, wherein said non-antibody immunomodulatory molecule is an immunosuppressive molecule.

22. The method of claim 19, wherein said non-antibody immunomodulatory molecule is selected from the group consisting of cytokine and heat shock protein.

23. The method of claim 22, wherein said cytokine is selected from the group consisting of GM-CSF, G-CSF, IFN-γ, IFN-α, TNF-α, TNF-β, IL-1. IL-2, IL-3, IL-4, IL-6, IL-7, IL-10, IL-12, lymphotactin and DC-CK1.

24. The method of claim 23, wherein said cytokine is GM-CSF.

25. The method of claim 19, wherein said cell is a prokaryotic cell.

26. The method of claim 19, wherein said cell is a eukaryotic cell.

27. The method of claim 26, wherein said eukaryotic cell is a fibroblast.

28. The method of claim 26, wherein said eukaryotic cell is a tumor cell.

18 ~~29~~. The method of claim ~~28~~ 17, wherein said tumor cell is selected from the group consisting of melanoma cell, renal carcinoma cell, neuroblastoma cell, glioblastoma cell, lung cancer cell, colon cancer cell, breast cancer cell, prostate cancer cell, bladder carcinoma cell and plasmacytoma cell.

19 ~~30~~. The method of claim ~~19~~ 13, wherein said disease-associated antigen is endogenous to said cell.

20 ~~31~~. The method of claim ~~19~~ 13, wherein said disease-associated antigen is exogenous to said cell.

21 ~~32~~. The method of claim ~~19~~ 13, wherein said disease-associated antigen is selected from the group consisting of a tumor-associated antigen, autoimmune disease-associated antigen, infectious disease-associated antigen, viral antigen, parasitic antigen and bacterial antigen.

22 ~~33~~. The method of claim ~~32~~ 21, wherein said tumor-associated antigen is selected from the group consisting of p53 and mutants thereof, Ras and mutants thereof, a Bcr/Abl breakpoint peptide, HER-2/neu, HPV E6, HPV E7, carcinoembryonic antigen, MUC-1, MAGE-1, MAGE-3, BAGE, GAGE-1, GAGE-2, N-acetylglucosaminyltransferase-V, p15, gp100, MART-1/MelanA, tyrosinase, TRP-1, β-catenin, MUM-1 and CDK-4.

23 ~~34~~. The method of claim ~~32~~ 21, wherein said autoimmune disease-associated antigen is a T cell receptor derived peptide.

35. The method of claim 19, wherein said disease-associated antigen or immunogenic epitope thereof is operatively fused to said membrane-bound fusion protein.

36. A nucleic acid molecule, comprising a nucleotide sequence encoding an non-antibody immunomodulatory molecule operatively linked to a heterologous nucleotide sequence encoding a membrane attachment domain functional at neutral or basic pH.

37. The nucleic acid molecule of claim 36, wherein said non-antibody immunomodulatory molecule is an immunostimulatory molecule.

38. The nucleic acid molecule of claim 36, wherein said non-antibody immunomodulatory molecule is an immunosuppressive molecule.

39. The nucleic acid molecule of claim 36, wherein said non-antibody immunomodulatory molecule is selected from the group consisting of cytokine and heat shock protein.

40. The nucleic acid molecule of claim 39, wherein said cytokine is selected from the group consisting of GM-CSF, G-CSF, IFN-γ, IFN-α, TNF-α, TNF-β, IL-1. IL-2, IL-3, IL-4, IL-6, IL-7, IL-10, IL-12, lymphotactin and DC-CK1.

41. The nucleic acid molecule of claim 40, wherein said cytokine is GM-CSF.

42. The nucleic acid molecule of claim 36, further comprising an operatively linked nucleotide sequence encoding a disease-associated antigen or immunogenic epitope thereof.

43. The nucleic acid molecule of claim 42, wherein said disease-associated antigen is selected from the group consisting of tumor-associated antigen, autoimmune disease-associated antigen, infectious disease associated antigen, viral antigen, parasitic antigen and bacterial antigen.

44. The nucleic acid molecule of claim 43, wherein said tumor-associated antigen is selected from the group consisting of p53 and mutants thereof, Ras and mutants thereof, Bcr/Abl breakpoint peptides, HER-2/neu, HPV E6, HPV E7, carcinoembryonic antigen, MUC-1, MAGE-1, MAGE-3, BAGE, GAGE-1, GAGE-2, N-acetylglucosaminyltransferase-V, p15, gp100, MART-1/MelanA, tyrosinase, TRP-1, β-catenin, MUM-1 and CDK-4.

45. The nucleic acid molecule of claim 43, wherein said autoimmune disease-associated antigen is a T cell receptor derived peptide.

46. A nucleic acid molecule, comprising a nucleotide sequence encoding a non-antibody immunomodulatory molecule operatively linked to a heterologous nucleotide sequence encoding a membrane attachment domain, provided that said membrane attachment domain is not derived from diphtheria toxin.